

U.S. DOE Perspectives



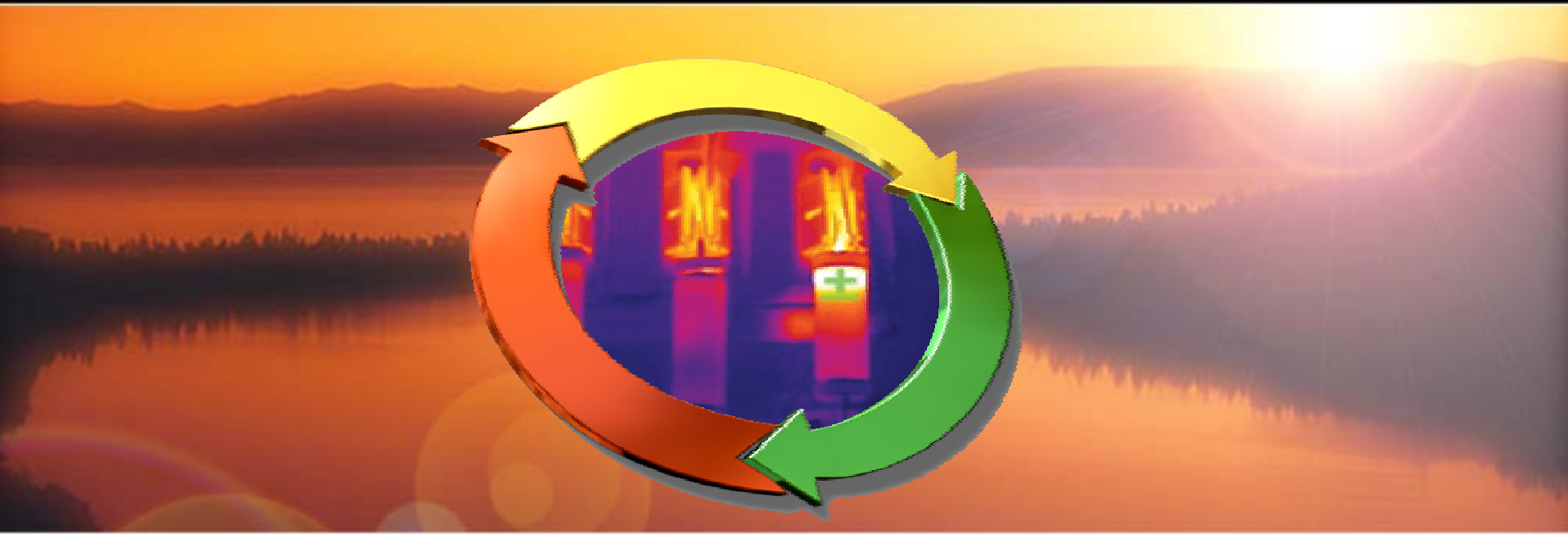
Thermally Activated Technologies

Vision for the Future

January 7, 2003

Gary Burch

**Distributed Energy and Electric Reliability Program
Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy**



Rethinking Thermal Energy

Scope of Activities

Baseline Technologies

- Absorption Chillers
- Desiccants
- Absorption Heat Pumps

Potential Additions

- Heat Exchangers
- Advanced Cycles
- Controls
- Advanced Materials

Associated Programs

- CHP& DG
- Thermal Storage
- Efficient Buildings
- Industrial Processes

Thermally Activated Technologies Program

RD&D Activities

Paradigm Shift Technologies

Novel Heat Activated Technologies

High Density Energy Delivery Technologies

TAT Unique Features

- Essential for Combined Heat and Power systems
 - Ultra-high energy efficiencies
 - Humidity control and IAQ
 - Customer choice and flexibility



Vision

In the year 2020...

**Recycled thermal energy
will be used widely across
America. There will be
less on-peak electricity
use because of more
thermally-activated
heating and cooling.
Indoor environments will
be more healthy and
secure.**



Characteristics of the TAT Vision

- A public-private RD&D partnership will have developed “leap-frog” materials, designs, and controls for advanced thermally activated technologies and will have succeeded in integrating them into distributed energy systems.
- Thermally activated technologies will be considered critical by policy makers and the public in ensuring indoor air quality, environmental security, and public health and safety.
- A profitable distributed energy industry (includes DG, CHP, and TATs) will provide jobs, energy choices, and infrastructure for deployment, operations, and maintenance.

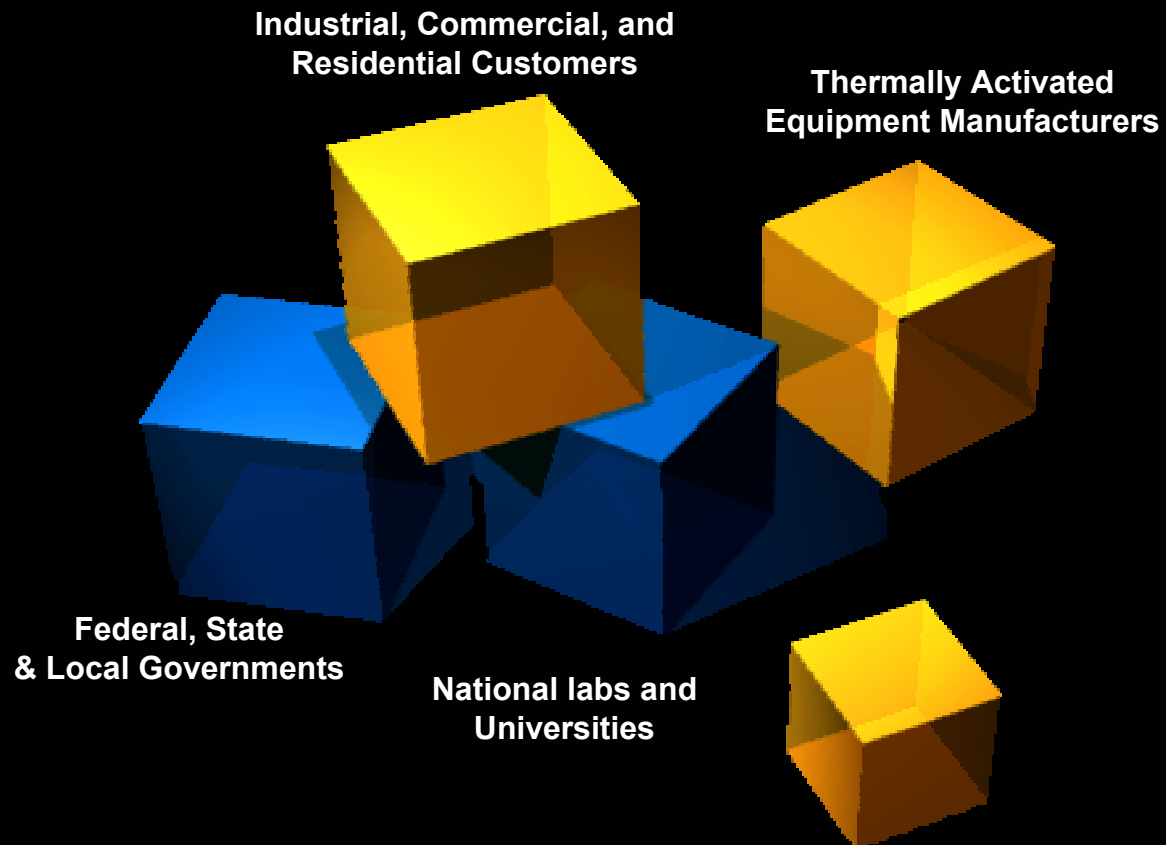


Strategic Goals

- By 2005, develop viable liquid desiccant systems
- By 2008, develop technologies for fuel diversity, including biofuels
- By 2008, incorporate advanced materials and design concepts from other industries to thermal recovery, storage, and transport systems
- By 2010, develop systems that use organic Rankine thermal cycles
- By 2012, develop revolutionary desiccant technologies & integrate into CHP systems
- By 2012, reinvent absorption technologies-and integrate them into CHP systems
- By 2015, develop advanced thermal power concepts
- By 2020, develop fully integrated energy systems including sensor technologies
- By 2020, achieve >90% market penetration for >150 ton applications
- By 2020, develop TATs that are capable of producing hydrogen



Building Blocks of a Partnership



- www.eren.doe.gov/deer
- Technical publications
- Workshops and conferences
- Technology planning
- Cost-shared RD&D

Project Developers,
Installers, and O&M Companies



Thermally Activated Technologies

Vision and Roadmap



Today

Vision

**Technology
Roadmap**

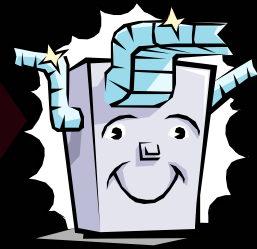
Implementation



Goals

Priorities

Partnerships



Tomorrow

Future 2020

RD&D

**Technology
Deployment**



Think Outside of the Box!

